1888MNRAS..48..140M

1888.		*Phobos.*		*Deimos.*	1888		*Phobos.*		*Deimos.*
		h	h	h			h	h	h
May	10	8·4 *w*	12·2 *e*	17·8 *w*	May	19	10·5 *e*	14·4 *w*	13·8 *w*
	11	11·2 *e*	15·0 *w*	8·9 *e*		20	9·5 *e*	13·3 *w*	5·0 *e*
	12	10·2 *e*	14·0 *w*	15·2 *e*		21	8·5 *e*	12·3 *w*	11·3 *e*
	13	9·1 *e*	13·0 *w*	6·4 *w*		22	11·3 *w*	15·1 *e*	17·6 *e*
	14	8·1 *e*	11·9 *w*	12·7 *w*		23	10·2 *w*	14·0 *e*	8·7 *w*
	15	10·9 *w*	14·7 *e*	18·9 *w*		24	9·2 *w*	13·0 *e*	15·0 *w*
	16	9·8 *w*	13·7 *e*	10·1 *e*		25	8·1 *w*	12·0 *e*	6·2 *e*
	17	8·8 *w*	12·6 *e*	16·4 *e*		26	7·1 *w*	10·9 *e*	12·5 *e*
	18	7·8 *w*	11·6 *e*	7·5 *w*		27	9·9 *e*	13·7 *w*	18·8 *e*

As *Deimos* has been observed with the 15-inch refractor of Harvard College on January 10, 1880, when the log. of the light-ratio of *Mars* was only 9·530 (corresponding to that of March 1 and June 13, 1888), there should be no difficulty of securing at least a few observations of both satellites by the more powerful instruments which are at present available.

Ephemeris of the Satellites of Uranus, 1888. By A. Marth.

Greenwich, Noon.		*Ariel.*				*Umbriel.*				
		a_1	b_1	u_1-U	Diff.	a_2	b_2	u_2-U	Diff.	P
1888.		″	″	°	°	″	″	°	°	°
Feb.	22	14·99 +	7·58	238·59	1428·38	20·88 +	10·56	94·65	868·69	283·677
Mar.	3	15·08	7·56	226·97	·36	21·01	10·53	243·34	·66	283·735
	13	15·15	7·51	215·33	·33	21·11	10·46	32·00	·65	283·802
	23	15·20	7·44	203·66	·30	21·18	10·36	180·65	·62	283·874
Apr.	2	15·22	7·35	191·96	·27	21·20	10·24	329·27	·61	283·947
	12	15·21	7·25	180·23	·26	21·20	10·10	117·88	·60	284·019
	22	15·18	7·14	168·49	·24	21·15	9·95	266·48	·60	·086
May	2	15·13 +	7·02	156·73	·22	21·07 +	9·79	55·08	·59	·146
	12	15·05	6·91	144·95	·22	20·96	9·63	203·67	·59	·196
	22	14·95	6·80	133·17	·22	20·83	9·48	352·26	·59	·235
June	1	14·84	6·71	121·39	·22	20·67	9·34	140·85	·60	·262
	11	14·72	6·62	109·61	·23	20·50	9·23	289·45	·61	·277
	21	14·59	6·56	97·84	·23	20·32	9·13	78·06	·62	·279
July	1	14·45	6·51	86·07	1428·25	20·13	9·07	226·68	868·64	·267
	11	14·32 +	6·48	74·32		19·95 +	9·03	15·32		284·242

1888MNRAS..48..140M

	Titania.				*Oberon.*				
	a_3	b_3	$u_3-\mathrm{U}$	Diff.	a_4	b_4	$u_4-\mathrm{U}$	U	B
1888.	″	″	°	°	″	″	°	°	°
Feb. 22	34·26 +	17·31	343·82	413·48	45·81 +	23·15	147·18	1·726 +	30·36
Mar. 3	34·47	17·26	37·30	·46	46·09	23·09	54·53	1·783	30·06
13	34·63	17·16	90·76	·45	46·31	22·94	321·87	1·849	29·70
23	34·73	17·00	144·21	·45	46·45	22·73	229·20	1·921	29·30
Apr. 2	34·78	16·80	197·66	·44	46·51	22·47	136·52	1·995	28·88
12	34·77	16·57	251·10	·43	46·49	22·16	43·84	2·068	28·46
22	34·69	16·31	304·53	·44	46·39	21·82	311·16	2·136	28·05
May 2	34·56 +	16·05	357·97	·44	46·22 +	21·46	218·48	2·197 +	27·67
12	34·38	15·79	51·41	·45	45·98	21·12	125·81	2·249	27·34
22	34·16	15·54	104·86	·45	45·68	20·79	33·15	2·289	27 07
June 1	33·91	15·32	158·31	·46	45·34	20·49	300·50	2·316	26·87
11	33·62	15·13	211·77	·48	44·97	20·24	207·86	2·329	26·75
21	33·33	14·98	265·25	·49	44·57	20·04	115·23	2·326	26·71
July 1	33·03	14·87	318·74	413·50	44·17	19·89	22·61	2·308	26·77
11	32·73 +	14·81	12·24		43·77 +	19·80	290·01	2·278 +	26·91

The notation is the same as in the ephemeris of the satellites of *Mars*.

The four satellites of *Uranus* are assumed to move in the same plane, the ascending node N and inclination J of which in reference to the celestial equator of 1880·0 are assumed to have the values

$$\mathrm{N}=165^\circ{\cdot}770\,; \qquad \mathrm{J}=75^\circ{\cdot}210.$$

The satellites move in the direction of increasing position-angles, and will be at their greatest elongations (N. in position-angle P + 90°, S. in position P − 90°) and at their conjunctions (superior conjunction in position P, inferior conjunction in position P − 180°) with the centre of the planet at the following Greenwich mean times :—

Ariel.

1888.		N. Elong.	S. Elong.				N. Elong.	S. Elong.				N. Elong.	S. Elong.	
		h		h			h		h			h		h
Feb.	26	0·0	27	6·3	Mar.	19	16·4	20	22·7	Apr.	11	8·8	12	15·1
	28	12·5	28	18·7		22	4·9	23	11·1		13	21·3	15	3·6
Mar.	2	1·0	3	7·2		24	17·4	25	23 6		16	9·8	17	16·1
	4	13·5	5	19·7		27	5·9	28	12·1		18	22·3	20	4·6
	7	2·0	8	8·2		29	18·4	31	0·6		21	10·8	22	17·1
	9	14·5	10	20·7	Apr.	1	6·9	2	13·1		23	23·3	25	5·5
	12	2·9	13	9·2		3	19·4	5	1·6		26	11·8	27	18·0
	14	15·4	15	21·7		6	7·9	7	14·1		29	0·3	30	6 5
	17	3·9	18	10·2		8	20·3	10	2·6	May	1	12·8	2	19·0

1888MNRAS..48..140M

1888.	N. Elong.	S. Elong.			N. Elong.	S. Elong.			N. Elong.	S. Elong.	
	h		h		h		h		h		h
May 4	1·3	5	7·5	May 26	17·7	28	0·0	June 18	10·2	19	16·4
6	13·8	7	20·0	29	6·2	30	12·5	20	22·7	22	4·9
9	2·3	10	8·5	31	18·7	Ju. 2	1·0	23	11·2	24	17·4
11	14·8	12	21·0	June 3	7·2	4	13·5	25	23·7	27	5·9
14	3·3	15	9·5	5	19·7	7	2·0	28	12·2	29	18·4
16	15·8	17	22·0	8	8·2	9	14·5	July 1	0·7	2	6·9
19	4·2	20	10·5	10	20·7	12	3·0	3	13·2	4	19·4
21	16·7	22	23·0	13	9·2	14	15·4	6	1·6	7	7·9
24	5·2	25	11·5	15	21·7	17	3·9	8	14·1	9	20·4

Umbriel.

Feb. 26	2·2	28	3·9	Apr. 11	16·3	13	18·0	May 27	6·5	29	8·2
Mar. 1	5·6	3	7·4	15	19·8	17	21·5	31	9·9	Ju. 2	11·7
5	9·1	7	10·8	19	23·2	22	1·0	June 4	13·4	6	15·2
9	12·6	11	14·3	24	2·7	26	4·4	8	16·9	10	18·6
13	16·0	15	17·8	28	6·2	30	7·9	12	20·4	14	22·1
17	19·5	19	21·2	May 2	9·6	4	11·4	16	23·8	19	1·6
21	23·0	24	0·7	6	13·1	8	14·9	21	3·3	23	5·0
26	2·4	28	4·2	10	16·6	12	18·3	25	6·8	27	8·5
30	5·9	Ap. 1	7·6	14	20·1	16	21·8	29	10·2	Jy. 1	12·0
Apr. 3	9·4	1	11·1	18	23·5	21	1·3	July 3	13·7	5	15·4
7	12·8	9	14·6	23	3·0	25	4·7	7	17·2	9	18·9

Titania.

1888.	h			h		h			h
Feb. 22	9·4	sup.	Mar. 28	5·3	May 2	1·2	sup.	June 5	21·1
24	13·6	N.	30	9·5	4	5·4	N.	8	1·3
26	17·9	inf.	Apr. 1	13·7	6	9·7	inf.	10	5·6
28	22·1	S.	3	18·0	8	13·9	S.	12	9·8
Mar. 2	2·4	sup.	5	22·2	10	18·2	sup.	14	14·0
4	6·6	N.	8	2·5	12	22·4	N.	16	18·3
6	10·8	inf.	10	6·7	15	2·6	inf.	18	22·5
8	15·1	S.	12	11·0	17	6·9	S.	21	2·8
10	19·3	sup.	14	15·2	19	11·1	sup.	23	7·0
12	23·6	N.	16	19·5	21	15·4	N.	25	11·2
15	3·8	inf.	18	23·7	23	19·6	inf.	27	15·5
17	8·0	S.	21	4·0	25	23·9	S.	29	19·7
19	12·3	sup.	23	8·2	28	4·1	sup.	July 1	23·9
21	16·5	N.	25	12·4	30	8·3	N.	4	4·2
23	20·8	inf.	27	16·7	June 1	12·6	inf.	6	8·4
26	1·0	S.	29	20·9	3	16·8	S.	8	12·7

1888MNRAS..48..140M

Oberon.

1888.	h			h		h			h
Feb. 16	11·9	sup.	Mar. 27	21·4	May 7	7·0	sup.	June 16	16·6
19	20·7	N.	31	6·2	10	15·8	N.	20	1 4
23	5·5	inf.	Apr. 3	15·0	14	0·6	inf.	23	10 1
26	14·3	S.	6	23·8	17	9·4	S.	26	18·9
29	23·0	sup.	10	8·6	20	18·2	sup.	30	3·7
Mar. 4	7·8	N.	13	17·4	24	3·0	N.	July 3	12·5
7	16·6	inf.	17	2·2	27	11·8	inf.	6	21·3
11	1·4	S.	20	11·0	30	20·6	S.	10	6·0
14	10·2	sup.	23	19·8	June 3	5·4	sup.		
17	19·0	N.	27	4·7	6	14·2	N.		
21	3·8	inf.	30	30·5	9	23·0	inf.		
24	12·6	S.	May 3	22·3	13	7·8	S.		

Titania and *Oberon* will appear in a line with the centre of the planet at the following times:—

In opposite directions of the centre—

	h		h		h
Feb. 20	20·7	Apr. 10	3·2	May 29	9·9
Mar. 16	11·9	May 4	18·5	June 23	1·2

And in the same direction from the centre—

	h		h		h
Mar. 4	4·3	Apr. 22	10·9	June 10	17·6
28	19·6	May 17	2·2	July 5	8·9